

REMARKS

The above amendments to the above-captioned application along with the following remarks are being submitted as a full and complete response to the Official Action dated May 2, 2003. In view of the above amendments and the following remarks, the Examiner is respectfully requested to give due reconsideration to this application, to indicate the allowability of the claims, and to pass this case to issue.

Status of the Claims

Claims 1-9 are under consideration in this application. Claims 1-2 and 8-9 are being amended, as set forth in the above marked-up presentation of the claim amendments, in order to more particularly define and distinctly claim applicants' invention.

Additional Amendments

The claims are being amended to correct formal errors and/or to better recite or describe the features of the present invention as claimed. All the amendments to the claims are supported by the specification. Applicants hereby submit that no new matter is being introduced into the application through the submission of this response.

Prior Art Rejections

Claims 1-3, 5-6 and 8-9 were rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Pat. No. 6,383,668 to Fullerton et al. (hereinafter "Fullerton"). Claim 4 was rejected under 35 U.S.C. 103(a) as being unpatentable over Fullerton in view of U.S. Pat. App. No. 2002/0098389 to Wang et al. (hereinafter "Wang"), and claim 7 was rejected as being unpatentable over Fullerton in view of U.S. Pat. App. No. 2002/0160234 to Sakawaki et al. (hereinafter "Sakawaki"). The prior art references of Doerner et al. (6,537,684), Do et al. (6,372,330), and Carey et al. (6,280,813) were cited as being pertinent to the present application. These rejections have been carefully considered, but are most respectfully traversed.

The magnetic recording medium according to the invention (e.g., Fig. 1), as now recited in claim 1, comprises: a substrate 10; an underlayer 12, 12' formed over said substrate 10; and **a magnetic recording layer** (13 + 14 + 15 or 13' + 14' + 15') formed over said underlayer 12, 12', having a first magnetic layer 13, 13', a second magnetic layer 15, 15', and a non-magnetic

intermediate layer 14, 14' formed between said first magnetic layer 13, 13' and said second magnetic layer 15, 15'. The first magnetic layer 13, 13' contains Co, Pt, and Cr, the non-magnetic intermediate layer 14, 14' contains at least one element selected from the group consisting of Ru, Ir, and Rh, and the second magnetic layer 15, 15' contains Co as a main component. In particular, the first magnetic layer 13, 13' and the second magnetic layer 15, 15' are magnetized in the antiparallel direction in the absence of an applied magnetic field, and the amount of Pt contained in said first magnetic layer 13, 13' is no less than 3 at% and no more than 9 at%. In other words, the first magnetic layer 13, 13' and the second magnetic layer 15, 15' are anti-ferromagnetically coupled through the non-magnetic intermediate layer 14, 14'.

The invention is also directed to a magnetic recording medium, as now recited in claim 2, including a substrate and a **magnetic recording layer** formed thereon with an underlayer interposed between them, wherein said magnetic recording layer comprises: a first magnetic layer containing Pt formed on said underlayer, a second magnetic layer, and a non-magnetic intermediate layer formed between said first magnetic layer and said second magnetic layer. In particular, the first magnetic layer and said second magnetic layer are magnetized in the antiparallel direction in the absence of an applied magnetic field, the amount of Pt contained in said first magnetic layer is no less than 3 at % and no more than 9 at %.

The invention is further directed to a magnetic storage (claims 8-9) which comprises a magnetic recording medium, a drive unit to turn the magnetic recording medium, a magnetic head consisting of a writing part and a reading part, a means to move the magnetic head relative to the magnetic recording medium, and a signal processing unit to send and receive signals to and from the magnetic head, wherein the reading part of said magnetic head is a giant magneto-resistive effect element or has a tunnel junction which produces the magneto-resistive effect, and said magnetic recording medium is the same as the one recited in claim 1 or claim 2.

Applicants respectfully contend that neither Fullerton nor any other cited references teaches or suggests such a 3-layer magnetic recording medium which provides a lower medium noise level, i.e., a high S/N (page 24, line 20-page 25, line 3; Fig. 11).

In contrast, Fullerton's magnetic recording media comprises a substrate 21, an underlayer 23, a host layer 30, and a magnetic recording layer 25 (Fig. 2; col. 4, lines 2-5). It is the **host layer** 30 underneath the magnetic recording layer 25 (rather than the **magnetic recording layer** 25 itself) which is made up of two ferromagnetic film 32, 34 separated by a nonferromagnetic spacer film 36, although "*the magnetic moments 42, 44 of adjacent films 32, 34, respectively, are*

AF-coupled through the nonferromagnetic spacer film 36 and are anti parallel in zero applied magnetic fields (col. 4, lines 7-10)."

Specifically, Fullerton teaches that the magnetic recording layer 25 has a **different** composition from the top ferromagnetic film 32 in the host layer 30 and is ferromagnetically exchange-coupled to the top ferromagnetic film 32 of the host layer 30 (Abstract; col. 5, lines 49-50) such that the composition of the magnetic recording layer 25 has to be different from the host layer 30, i.e., the magnetic recording layer 25 does NOT have the 3-layer structure as the host layer 30. It is well established that a rejection based on cited references having contradictory principles or principles that teach away from the invention is improper. Other cited references fail to compensate for Fullerton's deficiencies.

Applicants contend that neither the cited references, nor their combinations teach or disclose each and every feature of the present invention as disclosed in independent claims 1-2 and 8-9. As such, the present invention as now claimed is distinguishable and thereby allowable over the rejections raised in the Office Action. The withdrawal of the outstanding prior art rejections is in order, and is respectfully solicited.

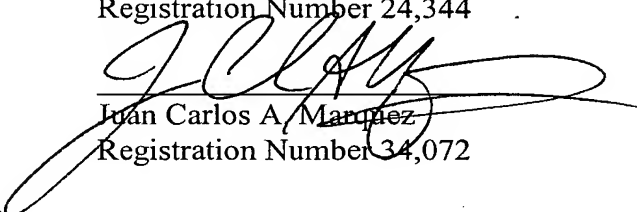
In view of all the above, clear and distinct differences as discussed exist between the present invention as now claimed and the prior art reference upon which the rejections in the Office Action rely, Applicant respectfully contends that the prior art references cannot anticipate the present invention or render the present invention obvious. Rather, the present invention as a whole is distinguishable, and thereby allowable over the prior art.

Favorable reconsideration of this application is respectfully solicited. Should there be any outstanding issues requiring discussion that would further the prosecution and allowance of

the above-captioned application, the Examiner is invited to contact the Applicants' undersigned representative at the address and phone number indicated below.

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October 1, 2003

SPF/JCM/JT